WHAT IS CLAIMED IS:

1.   A method for computing a primary path within a network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the method comprising:

   identifying a plurality of potential paths which are characteristically similar, each of the plurality of potential paths which are characteristically similar being arranged between the source node and the destination node;

   selecting a first potential path from the plurality of potential paths which are characteristically similar; and

   considering the first potential path for use as an actual path between the source node and the destination node, wherein other potential paths included in the plurality of potential paths which are characteristically similar are not considered for use as the actual path between the source node and the destination node.

2.   A method as recited in claim 1 wherein selecting the first potential path from the plurality of potential paths includes:

   determining a cost of each potential path of the plurality of potential paths which are characteristically similar, wherein the cost of the first potential path is lower than the cost of substantially all other potential paths included in the plurality of potential paths.

3.   A method as recited in claim 1 further including:

   identifying a second potential path for use as the actual path between the source node and the destination node, the second potential path being characteristically different from the first potential path.

4.   A method as recited in claim 3 wherein considering the first potential path for use as the actual path between the source node and the destination node includes:

   comparing the first potential path with the second potential path; and

selecting one of the first potential path and the second potential path for use as the actual path.

5. A method as recited in claim 4 wherein comparing the first potential path with the second potential path includes comparing a cost of the first potential path with a cost of the second potential path, and selecting one of the first potential path and the second potential path for use as the actual path includes selecting the first potential path for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and selecting the second potential path for use as the actual path when the cost of the second potential path is lower than the cost of the first potential path.

6. A method as recited in claim 1 further including:
identifying substantially all potential paths arranged between the source node and the destination node.

7. A method as recited in claim 6 wherein identifying substantially all the potential paths includes:
selecting a first link, the first link being arranged between the source node and a first node included in the plurality of nodes;
selecting a second link, the second link being associated with the first node; and
determining when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to a potential path.

8. A method as recited in claim 7 wherein the first link and the second link form a potential path segment, and determining when the first link and the second link are protectable includes determining when an alternate potential path segment associated with the source node and the first node exists for the potential path segment.

9.   A method as recited in claim 1 wherein the plurality of potential paths which are characteristically similar have similar protection characteristics.

10.   A method as recited in claim 9 wherein the plurality of potential paths have the same protection configuration.

11.   A computer program product for computing a primary path within a network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the computer program product comprising:

computer code that causes a plurality of potential paths which are characteristically similar to be identified, each of the plurality of potential paths which are characteristically similar being arranged between the source node and the destination node;

computer code that causes a first potential path to be selected from the plurality of potential paths which are characteristically similar;

computer code that causes the first potential path to be considered for use as an actual path between the source node and the destination node, wherein other potential paths included in the plurality of potential paths which are characteristically similar are not considered for use as the actual path between the source node and the destination node; and

a computer-readable medium that stores the computer codes.

12.   A computer program product according to claim 11 wherein the computer code that causes the first potential path to be selected from the plurality of potential paths includes:

computer code that causes a cost of each potential path of the plurality of potential paths which are characteristically similar to be determined, wherein the cost of the first potential path is lower than the cost of substantially all other potential paths included in the plurality of potential paths.

13.   A computer program product according to claim 11 further including:

computer code that causes a second potential path for use as the actual path between the source node and the destination node to be identified, the second potential path being characteristically different from the first potential path.

14.   A computer program product according to claim 13 wherein the computer code that causes the first potential path to be considered for use as the actual path between the source node and the destination node includes:

computer code that causes the first potential path to be compared with the second potential path; and

computer code that causes one of the first potential path and the second potential path to be selected for use as the actual path.

15.   A computer program product according to claim 14 wherein the computer code that causes the first potential path to be compared with the second potential path includes computer code that causes a cost of the first potential path to be compared with a cost of the second potential path, and the computer code that causes one of the first potential path and the second potential path to be selected for use as the actual path includes computer code that causes the first potential path to be selected for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and computer code that causes the second potential path to be selected for use as the actual path when the cost of the second potential path is lower than the cost of the first potential path.

16.   A computer program product according to claim 11 further including:

computer code that causes substantially all potential paths arranged between the source node and the destination node to be identified.

17.   A computer program product according to claim 16 wherein the computer code that causes substantially all the potential paths to be identified includes:

computer code that causes a first link to be selected, the first link being arranged between the source node and a first node included in the plurality of nodes;

5   computer code that causes a second link to be selected, the second link being associated with the first node; and

computer code that causes a determination to be made regarding when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to a potential path.

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18.   A computer program product according to claim 17 wherein the first link and the second link form a potential path segment, and the computer code that causes the determination to be made regarding when the first link and the second link are protectable includes computer code that causes a determination to be made regarding when an

15   alternate potential path segment associated with the source node and the first node exists for the potential path segment.

19.   A computer program product according to claim 11 wherein the computer-readable medium is one selected from the group consisting of a hard disk, a CD-ROM, a

20   DVD, a computer disk, a tape drive, a computer memory, and a data signal embodied in a carrier wave.

20.   A computer program product according to claim 11 wherein the plurality of potential paths which are characteristically similar have similar protection characteristics.

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21.   An apparatus for computing a primary path within a network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the apparatus comprising:

computer code that causes an identification of a first potential path and a second

30   potential path, the first potential path and the second potential path each being arranged

between the source node and the destination node, the first potential path and the second potential path being characteristically similar;

computer code that causes a selection of the first potential path;

computer code that causes a consideration of the first potential path for use as an actual path between the source node and the destination node, wherein the second potential path is not considered for use as the actual path between the source node and the destination node;

a computer-readable medium that stores the computer codes; and

a processor that executes the computer codes.

22.   An apparatus according to claim 21 wherein the computer code that causes the selection of the first potential path includes:

computer code that causes a determination of a cost of the first potential path and a cost of the second potential path, wherein the first potential path is selected when the cost of the first potential path is less than the cost of the second potential path.

23.   An apparatus according to claim 21 further including:

computer code that causes an identification of a third potential path for use as the actual path between the source node and the destination node, the third potential path being characteristically different from the first potential path.

24.   An apparatus according to claim 23 wherein the computer code that causes a consideration of the first potential path for use as the actual path between the source node and the destination node includes:

computer code that causes a comparison of the first potential path to the third potential path; and

computer code that selects one of the first potential path and the third potential path for use as the actual path.

25.   An apparatus according to claim 24 wherein the computer code that causes a comparison of the first potential path to the third potential path includes computer code that causes a comparison of a cost of the first potential path with a cost of the third potential path, and the computer code that causes a selection of one of the first potential path and the third potential path for use as the actual path includes computer code that causes a selection the first potential path for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and the computer code that causes a selection of the third potential path for use as the actual path when the cost of the third potential path is lower than the cost of the first potential path.

26.   An apparatus according to claim 21 further including:

computer code that causes an identification of substantially all potential paths arranged between the source node and the destination node.

27.   An apparatus according to claim 21 wherein the computer code that causes the identification of the first potential path includes:

computer code that causes a selection of a first link, the first link being arranged between the source node and a first node included in the plurality of nodes;

computer code that causes a selection of a second link, the second link being associated with the first node; and

computer code that causes a determination of when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to the first potential path.

28.   An apparatus according to claim 27 wherein the first link and the second link form a potential path segment, and the computer code that causes the determination of when the first link and the second link are protectable includes computer code that causes a determination of when an alternate potential path segment associated with the source node and the first node exists for the potential path segment.

29.   An apparatus for computing a primary path within a network, the network including a plurality of nodes and a plurality of links, the plurality of nodes including a source node and a destination node, the apparatus comprising:

means for identifying a first potential path and a second potential path, the first potential path and the second potential path each being arranged between the source node and the destination node, the first potential path and the second potential path being characteristically similar;

means for selecting the first potential path; and

means for considering the first potential path for use as an actual path between the source node and the destination node, wherein the second potential path is not considered for use as the actual path between the source node and the destination node.

30.   An apparatus according to claim 29 wherein the means for selecting the first potential path includes:

means for determining a cost of the first potential path and a cost of the second potential path, wherein the first potential path is selected when the cost of the first potential path is less than the cost of the second potential path.

31.   An apparatus according to claim 29 further including:

means for identifying a third potential path for use as the actual path between the source node and the destination node, the third potential path being characteristically different from the first potential path.

32.   An apparatus according to claim 31 wherein the means for considering the first potential path for use as the actual path between the source node and the destination node includes:

means for comparing the first potential path to the third potential path; and

means for selecting one of the first potential path and the third potential path for use as the actual path.

33.   An apparatus according to claim 32 wherein the means for comparing the first potential path to the third potential path includes means for comparing a cost of the first potential path with a cost of the third potential path, and the means for selecting one of the first potential path and the third potential path for use as the actual path includes means for selecting the first potential path for use as the actual path when the cost of the first potential path is lower than the cost of the second potential path and the means for selecting the third potential path for use as the actual path when the cost of the third potential path is lower than the cost of the first potential path.

34.   An apparatus according to claim 29 wherein the means for identifying the first potential path includes:

means for selecting a first link, the first link being arranged between the source node and a first node included in the plurality of nodes;

means for selecting a second link, the second link being associated with the first node; and

means for determining when the first link and the second link are protectable, wherein when the first link and the second link are protectable, the first link and the second link are added to the first potential path.

35.   An apparatus according to claim 34 wherein the first link and the second link form a potential path segment, and the means for determining when the first link and the second link are protectable includes means for determining when an alternate potential path segment associated with the source node and the first node exists for the potential path segment.

36.   A method for computing a primary path within a network with a mixed protection domain, the network including a plurality of nodes, the method comprising:

identifying a plurality of potential paths which begin at a first node and end at a second node, the plurality of potential paths including a first set of potential paths that

have a first characteristic and a second set of potential paths that have a second characteristic;

       selecting a first potential path from the first set of potential paths;

       selecting a second potential path from the second set of potential paths; and

       identifying a path for use in transferring a signal between the first node and the second node, the path for use in transferring the signal being identified from a third set of potential paths which includes the first potential path and the second potential path and substantially no other potential paths included in the first set of potential paths and the second set of potential paths.

37.   A method as recited in claim 36 wherein selecting the first potential path from the first set of potential paths includes:

       determining costs associated with each potential path from the first set of potential paths, wherein a cost associated with the first potential path is lower than the costs associated with other potential paths in the first set of potential paths.

38.   A method as recited in claim 36 wherein selecting the second potential path from the second set of potential paths includes:

       determining costs associated with each potential path from the second set of potential paths, wherein a cost associated with the second potential path is lower than the costs associated with other potential paths in the second set of potential paths.

39.   A method as recited in claim 36 wherein identifying the path for use in transferring the signal includes:

       evaluating a cost associated with each potential path in the third set of potential paths, wherein a potential path included in the third set of potential paths has an associated cost that is lower than costs associated with other potential paths included in the third set of potential paths, the potential path is identified as the path for use in transferring the signal.

40.   A method as recited in claim 36 wherein substantially each potential path included in the third set of potential paths is characteristically different from substantially every other potential path included in the third set of potential paths.

5   41.   An computer program product for computing a primary path within a network with a mixed protection domain, the network including a plurality of nodes, the computer program product comprising:

computer code that causes an identification of a plurality of potential paths which begin at a first node and end at a second node, the plurality of potential paths including a
10   first set of potential paths that have a first characteristic and a second set of potential paths that have a second characteristic;

computer code that causes a selection of a first potential path from the first set of potential paths;

computer code that causes a selection of second potential path from the second set
15   of potential paths;

computer code that causes an identification of a path for use in transferring a signal between the first node and the second node, the path for use in transferring the signal being identified from a third set of potential paths which includes the first potential path and the second potential path and substantially no other potential paths included in
20   the first set of potential paths and the second set of potential paths; and

a computer-readable medium that stores the computer codes.

42.   A computer program product as recited in claim 41 wherein the computer code that causes the selection of the first potential path from the first set of potential paths
25   includes:

computer code that causes a determination of costs associated with each potential path from the first set of potential paths, wherein a cost associated with the first potential path is lower than the costs associated with other potential paths in the first set of potential paths.

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43.   A computer program product as recited in claim 41 wherein the computer code that causes the selection of the second potential path from the second set of potential paths includes:

computer code that causes a determination of costs associated with each potential path from the second set of potential paths, wherein a cost associated with the second potential path is lower than the costs associated with other potential paths in the second set of potential paths.

44.   A computer program product as recited in claim 41 wherein the computer code that causes an identification of the path for use in transferring the signal includes:

computer code that causes an evaluation of a cost associated with each potential path in the third set of potential paths, wherein a potential path included in the third set of potential paths has an associated cost that is lower than costs associated with other potential paths included in the third set of potential paths, the potential path is identified as the path for use in transferring the signal.

45.   A computer program product as recited in claim 41 wherein substantially each potential path included in the third set of potential paths is characteristically different from substantially every other potential path included in the third set of potential paths.

46.   An apparatus for computing a primary path within a network with a mixed protection domain, the network including a plurality of nodes, the apparatus comprising:

means for identifying a plurality of potential paths which begin at a first node and end at a second node, the plurality of potential paths including a first set of potential paths that have a first characteristic and a second set of potential paths that have a second characteristic;

means for selecting a first potential path from the first set of potential paths;

means for selecting a second potential path from the second set of potential paths; and

means identifying a path for use in transferring a signal between the first node and the second node, the path for use in transferring the signal being identified from a third

set of potential paths which includes the first potential path and the second potential path and substantially no other potential paths included in the first set of potential paths and the second set of potential paths.

5   47.   An apparatus as recited in claim 46 wherein the means for selecting the first potential path from the first set of potential paths includes:

means for determining costs associated with each potential path from the first set of potential paths, wherein a cost associated with the first potential path is lower than the costs associated with other potential paths in the first set of potential paths.

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48.   An apparatus as recited in claim 46 wherein the means for selecting the second potential path from the second set of potential paths includes:

means for determining costs associated with each potential path from the second set of potential paths, wherein a cost associated with the second potential path is lower

15   than the costs associated with other potential paths in the second set of potential paths.

49.   An apparatus as recited in claim 46 wherein the means for identifying the path for use in transferring the signal includes:

means for evaluating a cost associated with each potential path in the third set of

20   potential paths, wherein a potential path included in the third set of potential paths has an associated cost that is lower than costs associated with other potential paths included in the third set of potential paths, the potential path is identified as the path for use in transferring the signal.

25   50.   An apparatus as recited in claim 46 wherein substantially each potential path included in the third set of potential paths is characteristically different from substantially every other potential path included in the third set of potential paths.

51.   An apparatus as recited in claim 46 further including:

30   means for placing the first potential path and the second potential path in the third set of potential paths.